Electronic TUBES

# 12BV7

# PENTODE

## FOR TV VIDEO AMPLIFIER APPLICATIONS

## DESCRIPTION AND RATING

The 12BV7 is a miniature power pentode designed primarily for use as the video output amplifier in television receivers. In application and characteristics it is related to the 12BY7. Like the 12BY7 it features high transconductance, high power sensitivity, and low interelectrode capacitances. It can deliver relatively large output voltages with low values of plate-supply voltage and plate load resistance.

### GENERAL

**ELECTRICAL**

| | Series | Parallel | |
|---|---|---|---|
| Cathode—Coated Unipotential | | | |
| Heater Voltage, AC or DC | 12.6 | 6.3 | Volts |
| Heater Current | 0.3 | 0.6 | Amperes |
| Direct Interelectrode Capacitances* | | | |
| Grid-Number 1 to Plate | | 0.055 | μμf |
| Input | | 11 | μμf |
| Output | | 3.0 | μμf |

**MECHANICAL**

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

### MAXIMUM RATINGS

**DESIGN-CENTER VALUES**

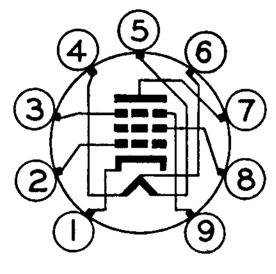
| | | |
|---|---|---|
| Plate Voltage | 300 | Volts |
| Screen Voltage | 175 | Volts |
| Negative DC Grid-Number 1 Voltage | 50 | Volts |
| Plate Dissipation | 6.25 | Watts |
| Screen Dissipation | 1.0 | Watts |
| Heater-Cathode Voltage | | |
| Heater Positive with Respect to Cathode | | |
| DC Component | 100 | Volts |
| Total DC and Peak | 200 | Volts |
| Heater Negative with Respect to Cathode | | |
| Total DC and Peak | 200 | Volts |
| Grid-Number 1 Circuit Resistance | | |
| With Fixed Bias | 0.25 | Megohms |
| With Cathode Bias | 1.0 | Megohms |






*Supersedes ET-T1315, dated 4-56*

### BASING DIAGRAM

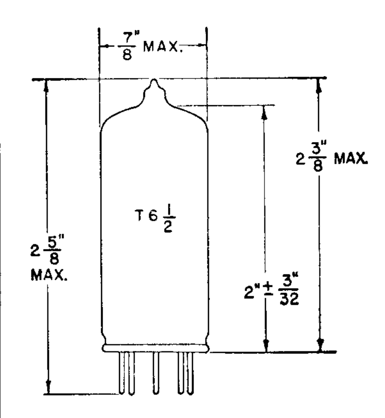



EIA 9BF

### TERMINAL CONNECTIONS

Pin 1—Cathode
Pin 2—Grid Number 1
Pin 3—Internal Shield and Grid Number 3 (Suppressor)
Pin 4—Heater
Pin 5—Heater
Pin 6—Heater Center-tap
Pin 7—Plate
Pin 8—Grid Number 2 (Screen)
Pin 9—Internal Shield and Grid Number 3 (Suppressor)

### PHYSICAL DIMENSIONS




EIA 6-3

# CHARACTERISTICS AND TYPICAL OPERATION

## CLASS $A_1$ AMPLIFIER

| | | | |
|---|---|---|---|
| Plate Voltage | 250 | 250 | Volts |
| Suppressor, Connected to Cathode at Socket | | | |
| Screen Voltage | 180 | 150 | Volts |
| Grid-Number 1 Voltage | −8 | — | Volts |
| Cathode-Bias Resistor | — | 68 | Ohms |
| Plate Resistance, approximate | — | 85000 | Ohms |
| Transconductance | — | 13000 | Micromhos |
| Plate Current | 0.5† | 27 | Milliamperes |
| Screen Current | — | 6.0 | Milliamperes |
| Grid-Number 1 Voltage, approximate | | | |
| Ib = 20 Microamperes | — | −12 | Volts |
| Triode Amplification Factor | | 28 | |

* Without external shield.
† Minimum.

## AVERAGE PLATE CHARACTERISTICS

$E_f$ = RATED VALUE
$E_{c2}$ = 150 VOLTS

$I_{c1}$ @ $E_{c1}$ = +2.0 VOLTS
+1.0
+2.0
+1.0
$I_b$ @ $E_{c1}$ = 0 VOLTS
−1.0
−2.0
−3.0
−4.0
−5.0
−6.0
−7.0

PLATE CURRENT ($I_b$) IN MILLIAMPERES
0 20 40 60 80 100 120 140

GRID-NUMBER 1 CURRENT ($I_{c1}$) IN MILLIAMPERES
0 5 10

PLATE VOLTAGE IN VOLTS
0 100 200 300 400 500

K-55611-TD46-1

SEPTEMBER 12, 1958

## AVERAGE SCREEN CHARACTERISTICS

$E_f$ = RATED VALUE
$E_{c2}$ = 150 VOLTS

SCREEN CURRENT IN MILLIAMPERES: 0, 5, 10, 15, 20, 25, 30, 35

+2.0, +1.0, $E_{c1}$ = 0 VOLTS, -1.0, -2.0, -3.0, -4.0, -5.0, -6.0

PLATE VOLTAGE IN VOLTS: 0, 100, 200, 300, 400, 500

K-55611-TD46-2

SEPTEMBER 12, 1958

## AVERAGE PLATE CHARACTERISTICS

$E_f$ = RATED VALUE
$E_{c1}$ = 0 VOLTS

PLATE CURRENT ($I_b$) IN MILLIAMPERES: 10, 20, 30, 40, 50, 60, 70

SCREEN CURRENT ($I_{c2}$) IN MILLIAMPERES: 0, 5, 10, 15, 20, 25, 30, 35

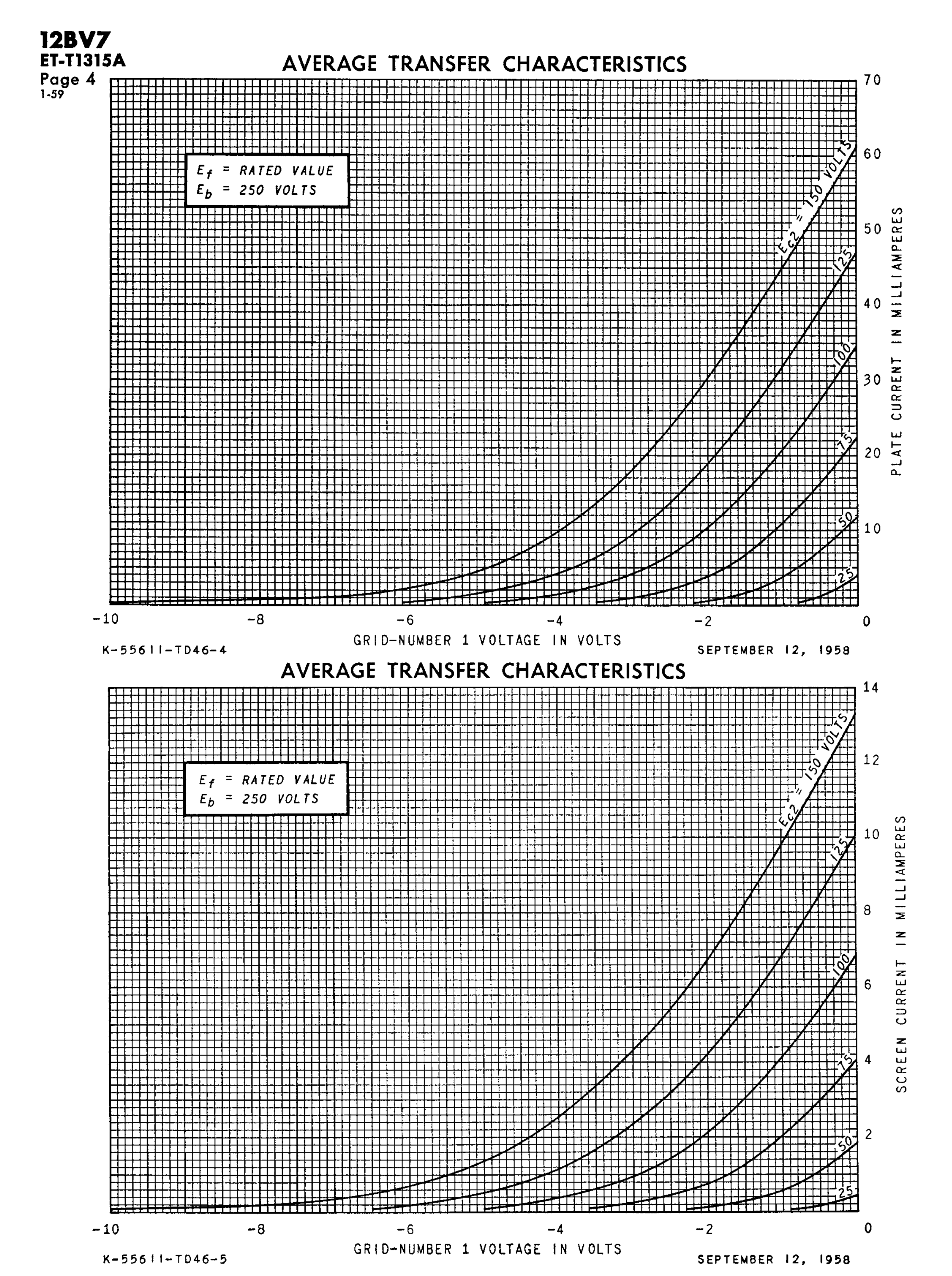
$I_b$ @ $E_{c2}$ = 150 VOLTS, 125, 100, 75, 50, 25

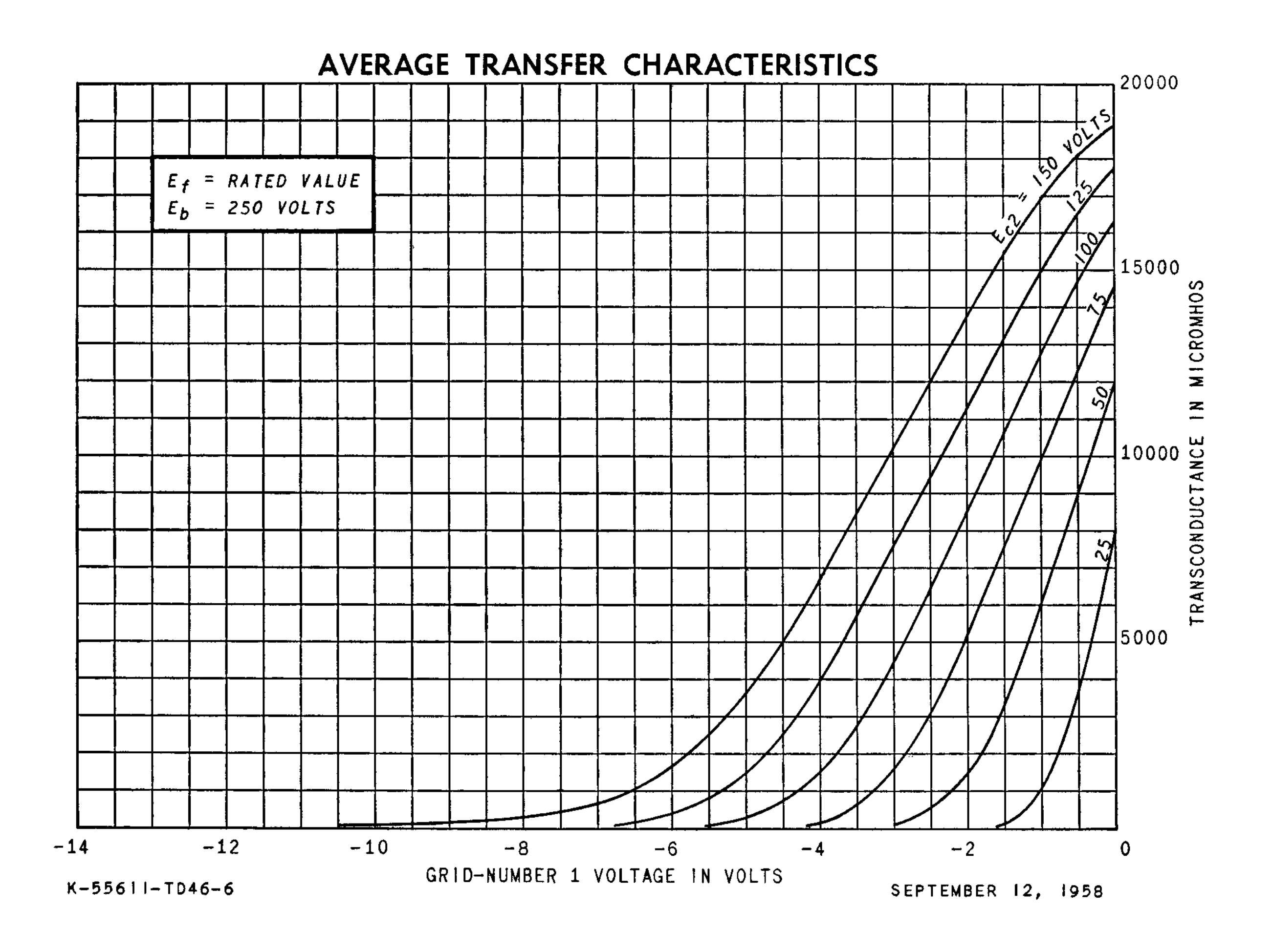
$I_{c2}$ @ $E_{c2}$ = 150 VOLTS, 125, 100, 75, 50, 25

PLATE VOLTAGE IN VOLTS: 0, 100, 200, 300, 400, 500

K-55611-TD46-3

SEPTEMBER 12, 1958


AVERAGE TRANSFER CHARACTERISTICS
Ef = RATED VALUE
Eb = 250 VOLTS
Ec2 = 150 VOLTS
125
100
75
50
25
70
60
50
40
30
20
10
0
PLATE CURRENT IN MILLIAMPERES
-10
-8
-6
-4
-2
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD46-4
SEPTEMBER 12, 1958
AVERAGE TRANSFER CHARACTERISTICS
Ef = RATED VALUE
Eb = 250 VOLTS
Ec2 = 150 VOLTS
125
100
75
50
25
14
12
10
8
6
4
2
0
SCREEN CURRENT IN MILLIAMPERES
-10
-8
-6
-4
-2
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD46-5
SEPTEMBER 12, 1958


AVERAGE TRANSFER CHARACTERISTICS
$E_f$ = RATED VALUE
$E_b$ = 250 VOLTS
$E_{c2}$ = 150 VOLTS
125
100
75
50
25
20000
15000
10000
5000
TRANSCONDUCTANCE IN MICROMHOS
-14
-12
-10
-8
-6
-4
-2
0
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD46-6
SEPTEMBER 12, 1958